



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,281	06/16/2005	Kimiyasu Isobe	273891US0XPCT	2634
22850	7590	07/25/2006	EXAMINER	
C. IRVIN MCCLELLAND OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			RAGHU, GANAPATHIRAM	
			ART UNIT	PAPER NUMBER
			1652	

DATE MAILED: 07/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/539,281

Applicant(s)

ISOBE ET AL.

Examiner

Ganapathirama Raghu

Art Unit

1652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>06/16/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-14 are pending are pending in this application and are now under consideration for examination.

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). This application is a 371 PCT/JP03/16182 filed on 12/17/2003 and claims the priority date of Japanese application 2002-366389 filed on 12/18/2002 and 2003-351560 filed on 10/10/2003. However, examiner notes that the English translation for the Japanese applications are not provided.

Abstract

The abstract of the disclosure is objected to because the abstract is not a single paragraph. Correction is required. See MPEP § 608.01(b).

Drawings

Drawings submitted on 06/16/2005 along with the application are accepted for examination purposes only.

Claim Objections

Art Unit: 1652

Claims 1 and 7 are objected to, due to the following informality: Claims 1 and 7 recites the phrase "...electrophoresis for denatured system" in the claims. This phrase would be clearer as "... denaturing electrophoresis system ", appropriate correction is required.

Claims 1 and 7 are objected to, due to the following informality: Claims 1 and 7 recites the phrase "...when heated at..." in the claims. This phrase would be clearer as "... when incubated at...", appropriate correction is required.

Claims 1 and 7 are objected to, due to the following informality: Claims 1 and 7 recites the phrase "...when reacted at..." in the claims. This phrase would be clearer as "... when incubated at...", appropriate correction is required.

Claims 1 and 7 are objected to, due to the following informality: Claims 1 and 7 recites the phrase "...stable near pH 9, and relatively stable near pH 7 to 10..." in the claims. This phrase would be clearer as "... stable at pH 9, and relatively stable in the pH range of 7-10 ...", appropriate correction is required.

Claim 1 is objected to, due to the following informality: Claim 1 recites the phrase "...the optimally active near pH 8 to 8.5 when reacted at..." in the claim. This phrase would be clearer as "...the optimal enzyme activity pH is at 8 to 8.5 when incubated at...", appropriate correction is required.

Claim 4 is objected to, due to the following informality: Claims 4 recites the phrase “base sequence” in the claim. Examiner suggests changing the phrase to “nucleotide sequence”, appropriate correction is required.

Claim 4 is objected to, due to the following informality: In Claim 4 “complimentary” is misspelled in the claim. Examiner suggests changing the phrase to “complementary”, appropriate correction is required.

Claims 6, 10 and 12 objected to because of the following informalities:

Applicant is advised that should claim 6 be found allowable, claims 10 and 12 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1 and 2 are rejected under 35 U.S.C. 101 because the claim could read on a non-statutory subject matter. The claims are drawn to ‘A D-aminoacylase’, which could read on product of nature. Claims directed to such matter are considered non-statutory. Examiner

Art Unit: 1652

suggests amending the claim to recite 'An isolated D-aminoacylase' to show the hand of man and in order to overcome the rejection.

Claims 3 and 4 are rejected under 35 U.S.C. 101 because the claim could read on a non-statutory subject matter. The claims are drawn to 'A gene', which could read on product of nature. Claims directed to such matter are considered non-statutory. Examiner suggests amending the claim to recite 'An isolated gene' to show the hand of man and in order to overcome the rejection.

Claims 5-7 and 10-12, are rejected under 35 U.S.C. 101 because the claims could read on a non-statutory subject matter. The claims are drawn to a 'Microorganism', which could read on product of nature. Claims directed to such matter are considered non-statutory. Examiner suggests amending the claim to recite 'An isolated microorganism' to show the hand of man and in order to overcome the rejection.

Claim Rejections: 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In the present instance, claims 1 and 7 (d) recite the broad recitation "... N-acetyl-D-amino acids", and the claim also recite "...N-acetyl-D-valine..." which is the narrower statement of the range/limitation.

In the present instance, claims 1 and 7 (g) recites the phrase "... relatively stable", it is not clear to the examiner what the metes and bounds of term "relatively" encompasses. Clarification is required.

Claim 4 is indefinite in the recitation of stringent conditions, as the specification does not define what conditions constitute "stringent". Perusal of the specification indicates there is no definition for the conditions which are intended to be stringent and in the art what is considered

Art Unit: 1652

stringent varies widely depending on the individual situation as well as the person making the determination. As such it is unclear how homologous to the sequence of a gene encoding SEQ ID NO: 1, a sequence must be to be included within the scope of these claims.

Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 4 (d) recites the phrase "... complementary to base sequence...", it is not clear to the examiner whether the complementary polynucleotide claimed is full length or partial complement of the claimed sequence. Clarification is required.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2-4 and 14 depending therefrom are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 2-4 and 14, are directed to an isolated polypeptide having D-aminoacylase activity, said polypeptide comprising the amino acid sequence of SEQ ID NO: 2 or a polypeptide comprising an amino acid sequence wherein substitution, deletion or addition of one to several amino acids to SEQ ID NO: 2 and to a gene comprising the polynucleotide sequence of SEQ ID

Art Unit: 1652

NO: 1 and variants encoding proteins as above or a DNA comprising the complementary sequence which hybridizes under any stringent conditions to SEQ ID NO: 1 (claim 4) and to a method for producing said polypeptide and a method of using said polypeptide for producing N-acetyl-D-amino acid (claim 14). Claims 2-4 and 14 are rejected under this section 35 U.S.C. 112, because the claims are directed to a genus of polypeptides and encoding polynucleotides with no support in the specification for the structural details associated with the function i.e., D-aminoacylase activity. No description of identifying characteristics of all of the sequences of an polypeptide comprising the amino acid sequence of SEQ ID NO: 2 or a polypeptide comprising an amino acid sequence wherein substitution, deletion or addition of one to several amino acids to SEQ ID NO: 2 and encoded by a gene comprising the polynucleotide sequence of SEQ ID NO: 1 or a DNA comprising the complementary sequence which hybridizes under any stringent conditions to SEQ ID NO: 1 and having D-aminoacylase activity (claims 2-4) and to a method for producing said polypeptide and a method of using said polypeptide for producing N-acetyl-D-amino acid (claim 14), has been provided in the application. Therefore, one skilled in the art cannot reasonably conclude that applicants' had possession of the claimed invention at the time the instant application was filed. Applicant is referred to the revised guidelines concerning compliance with the written description requirement of U.S.C. 112, first paragraph, published in the Official Gazette and also available at www.uspto.gov.

Claims 1-5, 9, 11 and 13-14 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an isolated polypeptide having D-aminoacylase activity with specific physico-chemical properties from a microorganism of *Deffluvibacter sp.* A

Art Unit: 1652

131-3, said polypeptide comprising the amino acid sequence of SEQ ID NO: 2 and encoded by a gene comprising the polynucleotide sequence of SEQ ID NO: 1 (claims 1-5) and to a method of using said polypeptide for producing N-acetyl-D-amino acid (claims 9, 11 and 13-14), does not reasonably provide enablement for any isolated polypeptide having D-aminoacylase activity and said physico-chemical properties recited in claim 1 or a polypeptide comprising an amino acid sequence wherein substitution, deletion or addition of one to several amino acids to SEQ ID NO: 2 or encoded by a gene, the complementary sequence which hybridizes under any stringent conditions to SEQ ID NO: 1 and having D-aminoacylase activity and a method of using said polypeptide for producing N-acetyl-D-amino acid. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and or use the invention commensurate in scope with the claim.

Factors to be considered in determining whether undue experimentation is required are summarized in *In re Wands* (858 F.2d 731, 8 USPQ 2d 1400 (Fed. Cir. 1988)) as follows: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claim(s).

Claims 1-5, 9, 11 and 13-14 are so broad as to encompass any isolated polypeptide having D-aminoacylase activity and said physico-chemical properties recited in claim 1 or a polypeptide comprising an amino acid sequence having substitution, deletion or addition of one to several amino acids to SEQ ID NO: 2 or encoded by a gene, the complementary sequence which hybridizes under any stringent conditions to SEQ ID NO: 1 and having D-aminoacylase

activity and a method of using said polypeptide for producing N-acetyl-D-amino acid. The scope of the claims are not commensurate with the enablement provided by the disclosure with regard to the extremely large number of polypeptides and encoding polynucleotides and said polypeptide with said physico-chemical properties, broadly encompassed by the claims. Since the amino acid sequence of a protein encoded by a polynucleotide determines its structural and functional properties, predictability of which changes can be tolerated in a protein's amino acid sequence and obtain the desired activity requires knowledge and guidance with regard to which amino acids in the protein's sequence and the respective codons in its polynucleotide, if any, are tolerant of modification and which are conserved (i.e. expectedly intolerant to modification), and detailed knowledge of the ways in which the encoded proteins' structure relates to its function. However, in this case the disclosure is limited to an isolated polypeptide having D-aminoacylase activity with specific physico-chemical properties from a microorganism of *Deffluvibacter* sp. A 131-3, said polypeptide comprising the amino acid sequence of SEQ ID NO: 2 and encoded by a gene comprising the polynucleotide sequence of SEQ ID NO: 1 and to a method for producing said polypeptide and a method of using said polypeptide for producing N-acetyl-D-amino acid, but provides no guidance with regard to the making of variants and mutants or with regard to other uses and said polypeptide isolated from any microorganism belonging to genus *Deffluvibacter* and its mutants thereof. In view of the great breadth of the claims, amount of experimentation required to make the claimed polypeptides and encoding polynucleotides, the lack of guidance, working examples, and unpredictability of the art in predicting function from a polypeptide primary structure (e.g., see Ngo et al. in *The Protein Folding Problem and Tertiary Structure Prediction*, 1994, Merz et al. (ed.), Birkhauser, Boston, MA, pp. 433 and 492-495), the

Art Unit: 1652

claimed invention would require undue experimentation. As such, the specification fails to teach one of ordinary skill how to use the full scope of the polypeptides encompassed by this claim.

While enzyme isolation techniques, recombinant and mutagenesis techniques are known, and it is not routine in the art to screen for multiple substitutions or multiple modifications as encompassed by the instant claim, the specific amino acid positions within a protein's sequence where amino acid modifications can be made with a reasonable expectation of success in obtaining the desired activity/utility are limited in any protein and the result of such modifications is unpredictable. In addition, one skilled in the art would expect any tolerance to modification for a given protein to diminish with each further and additional modification, e.g. multiple substitutions or deletions.

The specification does not support the broad scope of the claims which encompass all modifications of isolated polypeptide having D-aminoacylase activity and said physico-chemical properties or a polypeptide comprising an amino acid sequence wherein substitution, deletion or addition of one to several amino acids to SEQ ID NO: 2 or encoded by a gene the complementary sequence which hybridizes under any stringent conditions to SEQ ID NO: 1 and having D-aminoacylase activity and to a method for producing said polypeptide and a method of using said polypeptide for producing N-acetyl-D-amino acid, because the specification does not establish: (A) regions of the protein/polynucleotide structure which may be modified without affecting the activity of encoded D-aminoacylase activity; (B) the general tolerance of the polypeptide and the polynucleotide encoding D-aminoacylase activity to modification and extent of such tolerance; (C) a rational and predictable scheme for modifying any amino acid residue or the respective codon in the polynucleotide with an expectation of obtaining the desired biological

Art Unit: 1652

function; and (D) the specification provides insufficient guidance as to which of the essentially infinite possible choices is likely to be successful.

Thus, applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make and use the claimed invention in a manner reasonably correlated with the scope of the claims broadly including polypeptides and encoding polynucleotides with an enormous number of modifications. The scope of the claim must bear a reasonable correlation with the scope of enablement (*In re Fisher*, 166 USPQ 19 24 (CCPA 1970)). Without sufficient guidance, determination of polypeptides and encoding polynucleotides of D-aminoacylase activity having the desired biological characteristics is unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See *In re Wands* 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988).

Claims 6, 10 and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 6, 10 and 12 recite the D-aminoacylase producing organism *Deffluvibacter* sp. A 131-3, deposited as FERM BP-08563.

It is apparent that *Deffluvibacter* sp. A 131-3 is required to practice the claimed invention. As such the biological material must be readily available or obtainable by a repeatable method set forth in the specification, or otherwise readily available to the public and perusal of the specification. If it is not so obtainable or available, the requirements of 35 USC112, first

Art Unit: 1652

paragraph, may be satisfied by a deposit of the *Deftuvibacter* sp. A 131-3. The specification does not disclose a repeatable process to obtain the organism and does not show that it is readily available to the public.

It is noted that applicants have deposited the organism but there is no indication in the specification as to the public availability or certification of the deposit. If a deposit was made under the terms of Budapest Treaty, then a statement, affidavit or declaration by Applicants, or a statement by an attorney of record over his/her signature and registration number, or someone empowered to make such a statement, stating that the invention will be irrevocably and without restriction released to the public upon the issuance of a patent, would satisfy the deposit requirement made herein. The applicant must submit a statement from a person to corroborate the fact, stating that the biological material specifically identified in the application as filed and the complete address of the authority (place of deposit).

If the deposit has not been made under the Budapest Treaty, then in order to certify that the deposit meets the criteria set forth in 37 CFR 1.801-1.809 and MPEP 2402-2411.05, Applicant may provide assurance of compliance by statement, affidavit or declaration, or by someone empowered to make same, or by a statement by an attorney of record over his /her signature and registration number showing that:

- (a) during the pendency of the application, access to the invention will be afforded to the Commissioner upon request;
- (b) all restrictions upon availability to the public will be irrevocably removed upon granting the patent;

Art Unit: 1652

(c) the deposit will be maintained in public depository for a period of 30 years, or 5 years after the last request or for the enforceable life of the patent, whichever is longer;

(d) a test of the viability of the biological material at the time of deposit (see 37 CFR 1.807); and the deposit will be replaced if it should ever become inviable.

Claim Rejections 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 9 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Yang et al., (Appl. Environ. Microbiol., 1991, Vol. 57(4): 1259-160) when given the broadest interpretation. Claim 1 is directed to a D-aminoacylase having the following enzymological properties: (a) acting on a N-acetyl-D-amino acid to produce a D-amino acid; (b) molecular weight of about 55,000 daltons; (c) an isoelectric point of 5.3; (d) substrate specificity acting on N-acetyl-D-amino acids such as N-acetyl-D-valine, N-acetyl-D-leucine, N-acetyl-D-methionine, N-acetyl-D-tryptophan, N-acetyl-D-phenylalanine and N-acetyl-D-tyrosine but not on N-acetyl-L-valine, N-acetyl-L-leucine, N-acetyl-L-methionine, N-acetyl-L-tryptophan, N-acetyl-L-phenylalanine and N-acetyl-L-tyrosine; (e) thermostability: relatively stable at 4⁰ C to 30⁰ C when heated at pH 8.5 for 1 day; (f)- (h) optimal temperature: optimally active at 37⁰ C at pH 8 for 30 minutes, stable at pH 9 and relatively stable at pH 7-10; (i) activity inhibited by Mn²⁺, Co²⁺, Ni²⁺ and Zn²⁺; (j) activity is inhibited by dithiothreitol, 2-mercaptoethanol, O-

Art Unit: 1652

phenanthroline and L-cysteine and to a method of for producing D-amino acid comprising reacting the said D-aminoacylase with N-acetyl-D,L-amino acid or a N-acetyl-D-amino acid (claim 1), said D-aminoacylase comprising an amino acid sequence wherein substitution, deletion or addition of one to several amino acids to SEQ ID NO: 2 and having D-amnioacylase activity (claim 2), a method of producing and to a method of using said D-aminoacylase for the production of D-amino acids (claims 9 and 14).

Yang et al., (*supra*) disclose the purification and characterization of D-amnioacylase from *Alcaligenes faecalis* DA1 with an apparent molecular weight of 55,000 daltons and an isoelectric point of 5.4 (Abstract section, page 1259) and optimally active at a pH of 7.8 and at 37⁰ C (column 1, third paragraph, page 1259), with substrate specificity for N-acetyl-D-amino acids such as N-acetyl-D-valine, N-acetyl-D-leucine, N-acetyl-D-methionine, N-acetyl-D-tryptophan, N-acetyl-D-phenylalanine and N-acetyl-D-tyrosine but not on N-acetyl-L-valine, N-acetyl-L-leucine, N-acetyl-L-methionine, N-acetyl-L-tryptophan, N-acetyl-L-phenylalanine and N-acetyl-L-tyrosine (column 2, last paragraph, page 1259), enzyme most active in the pH range of 7-8 and stable between pH 5.0-11.0 when incubated at 30⁰ C for at least 12 hours (column 1, first paragraph, page 1260). While the reference cited above is silent on the activity of said enzyme being inhibited by Mn²⁺, Co²⁺, Ni²⁺ and Zn²⁺ or activity is inhibited by dithiothreitol, 2-mecaptoethanol, O-phenanthroline and L-cysteine, examiner takes the position that the two enzymes have similar physico-chemical properties, therefore the reference enzyme will also be inhibited by said inhibitors. Therefore the reference of Yang et al., anticipates the claims 1-2, 9 and 14 as written.

Claims 5 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Fritsche et al., (Syst Appl Microbiol., 1999, Vol. 22 (2): 197-204) when given the broadest interpretation. Claim 5 is directed to a microorganism of genus *Defluviibacter* which produces a D-aminoacylase that produces D-amino acid from a N-acetyl-D,L-amino acid or a N-acetyl-D-amino acid. Claim 11 is directed to a microorganism producing a D-aminoacylase said polypeptide comprising an amino acid sequence wherein substitution, deletion or addition of one to several amino acids to the amino acid sequence of SEQ ID NO: 2 and having D-aminoacylase activity. Fritsche et al., *supra* have disclosed the isolation of *Defluviibacter* sp., (Abstract section, first paragraph, page 197) and examiner takes the position that said bacterium inherently possesses the ability to produce D-aminoacylase and said aminoacylase comprises an amino acid sequence wherein substitution, deletion or addition of one to several amino acids to the amino acid sequence of SEQ ID NO: 2 of the instant application and having D-aminoacylase activity.

Since the Office does not have the facilities for examining and comparing applicants' bacteria and polypeptide with the bacteria and polypeptide of the prior art, the burden is on the applicant to show a novel or unobvious difference between the claimed product and the product of the prior art (i.e., that the bacteria and polypeptide of the prior art does not possess the same material structural and functional characteristics of the claimed protein). See *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and *In re Fitzgerald et al.*, 205 USPQ 594.

Claim Rejections 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1652

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 3 is rejected under 35 U.S.C. 103 (a) as being anticipated by Mitsuhashi et al., (patent No. : US 6,780,619 B2, date of patent 08/24/2004, claiming the priority date of US application 09/770,517, filed 01/26/2001). Claim 3 is drawn to a gene coding for a D-aminoacylase comprising a protein of amino acid sequence SEQ ID NO: 2 or a protein comprising an amino acid sequence having substitution, deletion or addition of one to several amino acids to SEQ ID NO: 2 and having D-aminoacylase activity. Mitsuhashi et al., disclose an isolated polypeptide sequence (SEQ ID NO: 2) of 558 amino acid residues and having D-aminoacylase activity and used in the method for producing D-amino acids.

The many advantages of recombinant production of useful proteins are well known within the art as are recombinant methods of obtaining the necessary genes. These advantages include the ability to produce much larger quantities of the protein, being able to produce the protein in more easily handled organisms, reducing the number of steps necessary for the purification of a protein and producing the protein in a purer form by using an organism that

Art Unit: 1652

does not include naturally occurring contaminants of the protein. As such the disclosure of a useful protein, such as that of Mitsuhashi et al., clearly suggests to the ordinary skilled artisan a gene encoding for the protein as such a gene would be useful to produce large quantities of the protein. Therefore, it would have been obvious to one of ordinary skill in the art to isolate and express the gene encoding the D-aminoacylase disclosed by Mitsuhashi et al., using well known recombinant methods for the isolation of such genes, insertion of the isolated gene into an expression vector, transformation into a suitable host and expression of the encoded protein. Therefore, Mitsuhashi et al., make obvious claim 3 as written.


Conclusion

None of the claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ganapathirama Raghu whose telephone number is 571-272-4533. The examiner can normally be reached on 8 am - 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapu Achutamurthy can be reached on 571-272-0928. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300 for regular communications and for After Final communications. Any inquiry of a general nature or relating to the status of the application or proceeding should be directed to the receptionist whose telephone number is 571-272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ganapathirama Raghu, Ph.D.
Patent Examiner
Art Unit 1652
July 05, 2006.


REBECCA E. PROUTY
PRIMARY EXAMINER
GROUP 1800-
1600